AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1-8. Cancelled.

9. (Withdrawn) A cryogenically tempered brake component, the brake component comprising:

a material;

a geometrical cross section;

a mass; and

an improved molecular structure,

wherein the improved molecular structure is dependent on the material, the geometrical cross section, and the mass.

10. (Withdrawn) The cryogenically tempered brake component of Claim 9, wherein the brake component further comprises a brake rotor.

11. (Withdrawn) The cryogenically tempered brake component of Claim 9, wherein the brake component further comprises a brake drum.

12. (Withdrawn) A cryogenically tempered brake component having an improved molecular structure achieved by cooling the brake component to approximately –300° F, wherein the brake component has improved structural properties.

13. (Withdrawn) The cryogenically tempered brake component of Claim 12, wherein the improved structural property is improved warpage resistance.

14. (Withdrawn) The cryogenically tempered brake component of Claim 12, wherein the improved structural property is improved heat resistance.

15. (Withdrawn) The cryogenically tempered brake component of Claim 12, wherein the improved structural property is reduced heat checking.

16. (Withdrawn) The cryogenically tempered brake component of Claim 12, wherein the improved structural property is reduced fading.

17. (Withdrawn) The cryogenically tempered brake component of Claim 12, wherein the improved structural property is reduced cracking.

18. (Withdrawn) A cryogenically tempered brake component made by the process of:

cooling the brake component to approximately –300° F, and maintaining the brake component at approximately –300° F for a stay time;

subsequently heating the brake component to approximately 300° F, and maintaining the brake component at approximately 300°F for a post temper time; and

cooling the brake component to ambient temperature.

19. (Withdrawn) A cryogenically tempered brake component made by a process of cooling the brake component to approximately –300° F and heating the brake component to approximately 300° F according to a processing profile that improves a service life of the brake component.

20. (Withdrawn) The cryogenically tempered brake component of Claim 19, wherein the service life of the brake component is achieved by improved warpage resistance.

21. (Withdrawn) The cryogenically tempered brake component of Claim 19, wherein the service life of the brake component is achieved by improved heat resistance.

22. (Withdrawn) The cryogenically tempered brake component of Claim 19, wherein the service life of the brake component is achieved by reduced heat checking.

23. (Withdrawn) The cryogenically tempered brake component of Claim 19, wherein the service life of the brake component is achieved by reduced fading.

24. (Withdrawn) The cryogenically tempered brake component of Claim 19, wherein the service life of the brake component is achieved by reduced cracking.

25. (Currently Amended) A method for deep cryogenic tempering of metallic brake ~~components~~ rotors, the method comprising the steps of:

(a) determining a mass and cross sectional area of the brake ~~components~~ rotors;

(b) placing the brake ~~components~~ rotors at a temperature within a cryogenic processing chamber;

(c) cooling the brake ~~components~~ rotors at a descent rate, the descent rate being a function of the mass and the cross sectional area of the brake ~~components~~ rotors, until the temperature of the brake ~~components~~ rotors is approximately –300° F;

[[(c)]] (d) maintaining the brake ~~components~~ rotors temperature at –300° F for a stay time, the stay time being a function of the mass and the cross sectional area of the brake ~~components~~ rotors;

[[(d)]] (e) raising the temperature of the brake ~~components~~ rotors to approximately 300° F at an ascent rate, the ascent rate being a function of the mass and the cross sectional area of the brake ~~components~~ rotors;

[[(e)]] (f) maintaining the temperature of the brake ~~components~~ rotors at 300° F for a post temper time;

[[(f)]] (g) lowering the temperature of the brake ~~component~~ rotors to room temperature at a cool down rate;

[[(g)]] (h) raising the temperature of the brake ~~component~~ rotors to approximately 300° F at an ascent rate;

[[(h)]] (i) maintaining the temperature of the brake ~~component~~ rotors at 300° F for a post temper time; and

[[(i)]] (g) lowering the temperature of the brake ~~component~~ rotors to room temperature at a cool down rate.

26. (Currently Amended) The method of Claim 25, wherein steps ~~(g), (h), and (i)~~ (h), (i), and (j) are repeated for a third post temper time.

27. (Currently Amended) The method of Claim 26, wherein:

the temperature of the brake ~~components~~ rotors is approximately 100 degrees F at step [[(a)]] (b).

28. (Currently Amended) The method of Claim 25 further comprising the step of:

raising the temperature of the brake ~~components~~ rotors to approximately –100° F within the cryogenic processing chamber after step [[(c)]] (d) and before step [[(d)]] (e).

29. (Currently Amended) The method of Claim 25 further comprising the step of transporting the brake ~~components~~ rotors to a tempering oven during step [[(e)]] (f).

30. (Previously Amended) The method of Claim 25, wherein the cooling of the brake ~~components~~ rotors is accomplished by introducing gaseous nitrogen into the cryogenic processing chamber.